

**ANALYSIS AND PRELIMINARY DETERMINATION FOR THE CONSTRUCTION PERMIT
FOR THE PROPOSED CONSTRUCTION
OF AN INDOOR AND OUTDOOR TESTING PROCESS AND A TRAINING/SERVICE CENTER,
MODIFICATION OF A LARGER ENGINE/GENERATOR TESTING PROCESS, AND MODIFICATION
OF STACKS FOR EXISTING ENGINE TESTING PROCESSES**

**FOR
GENERAC POWER SYSTEMS INC. -WAUKESHA,
LOCATED AT
STATE ROAD 59 AND HILLSIDE ROAD,
TOWN OF GENESEE, WAUKESHA COUNTY, WISCONSIN**

Construction Permit No.: 16-DMM-001
Facility ID No.: 268014670

This review was performed by the Wisconsin Department of Natural Resources, Northeast Region Headquarters in accordance with Chapter 285, Wis. Stats., and Chapters NR 400 to NR 499, Wis. Adm. Code.

Reviewed by: Dave Minkey Date: 02/18/2016

Peer review
conducted by: /s/ Andrew Stewart *for* Jonathan Wright Date: 02/23/2016

Preliminary Determination Approved by:	Signature	Date
Regional Supervisor or Central Office Designee:	/s/ Andrew Stewart	02/23/2016
Stationary Source Modeling Team Leader:	/s/ Emily Houtler	02/23/2016
Compliance Engineer (reviewed/approved):	/s/ Andrew Stewart <i>for</i> George Volpentesta	02/23/2016

cc: Bureau of Air Management (AM/7) – Construction Permits
George Volpentesta - Southeast Region Air Program, Waukesha Service Center

INTRODUCTION

Stationary sources that are not specifically exempt from the requirement to obtain a construction permit under s. 285.60(5), Wis. Stats. or ch. NR 406, Wis. Adm. Code may not commence construction, reconstruction, replacement, relocation or modification unless a construction permit for the project has been issued by the Department of Natural Resources' (DNR's) Air Management Program. Owners or operators subject to the construction permit requirements must submit a construction and operation permit application to the DNR. The application is reviewed following the provisions set forth in ss. 285.60 to 285.67, Wis. Stats. The criteria for permit issuance vary depending on whether the source is major or minor and whether the source is or proposed to be located in an attainment or nonattainment area.

Subject sources are to be reviewed with respect to the equipment and facility description provided in the application and for the resulting impact upon the air quality. The review ensures compliance with all applicable rules and statutory requirements. The preliminary determination will show why the source(s) should be approved, conditionally approved, or disapproved. It will encompass emission calculations and an air quality analysis using US EPA models, if applicable. Individual source dispersion modeling is not able to predict concentrations of ozone in ambient air nor is an air quality modeling analysis done for direct PM_{2.5} emissions from existing sources, minor new sources, and minor modifications of sources. Instead, the Department has used a weight of evidence approach to make a technical finding that direct emissions of PM_{2.5} do not cause or exacerbate violation of the PM_{2.5} air quality standards or increment. The Department follows federal guidance and regulation when implementing the federal permit programs including review of air quality modeling analyses as required by EPA.

The sources included in this construction permit are also required to obtain an operation permit under s. 285.60(1)(b), Wis. Stats. This review constitutes the Department's review of applications for both the construction permit and the operation permit for these units. Completion of this project will result in a revision of the facility-wide operation permit, which satisfies the requirement of s. 285.60(1)(b), Wis. Stats. As a result, this preliminary determination also addresses the approvability of the significant revision to the facility-wide operation permit under s. NR 407.13, Wis. Adm. Code.

A final decision on the construction permit and significant operation permit revision will not be made until the public has had an opportunity to comment on the Department's analysis, preliminary determination and draft permit. The United States Environmental Protection Agency will be given the opportunity to comment on the operation permit revision of any Part-70 source. The conditions proposed in the draft permit may be revised in any final permit issued based on comments received or further evaluation by the Department.

GENERAL APPLICATION INFORMATION

Owner/Operator: Generac Power Systems Inc. -Waukesha
PO Box 8
Waukesha, WI 53187-0008

Responsible Official: Dan Waschow, VP of Operational Excellence
(262) 544-4811

Application Contact Person: John Gibbons, Sr. Manager, Corporate EHS
(262) 544-4811

Application Submitted By: John Gibbons

Application Receipt Date: January 4, 2016

Additional Info Submitted: January 8, 14, 15 and 20, 2016; February 15, 16, 17 and 19, 2016

Date of Complete Application: February 18, 2016

PROJECT DESCRIPTION

Generac is proposing the following changes at its Waukesha facility:

- Construction of new indoor engine testing process P02A with up to 5 test cells and new outdoor engine testing process P02B with up to 5 test cells and new stack S02 to exhaust emissions from these new processes.
- Construction of new stack S01 to exhaust emissions from existing indoor engine testing process P01A (previously known as process P47) and existing outdoor engine testing process P01B (previously known as process P55).
- Expansion of the existing indoor large engine/generator testing process (previously known as process P70), removal of the 1,666 pounds per month NO_x restriction for this process, exclusion of this process from the facility-wide emission limitations in operation permit 268014670-P20 for facility-wide combustion processes, and modification of the exhaust system to vent emissions from process P03 to new stack S03.
- Construction of a new training/service center process P04 with up to 30 test cells. Generac has not yet decided whether they will construct a new stack S04 to serve process P04 or instead vent emissions from new process P04 to new stack S03. The permit will include two operating scenarios to allow for either option. Generac will select one of these scenarios during the construction authorization period and notify the Department which scenario they have selected. When the Department issues the next operation permit for the facility, it will incorporate the appropriate scenario.

These changes require a construction permit under ch. NR 406, Wis. Adm. Code, because the project does not qualify for a specific exemption in s. NR 406.04(1), Wis. Adm. Code, and the maximum theoretical emissions of carbon monoxide (CO), volatile organic compound (VOC), nitrogen oxides (NO_x), particulate matter (PM), PM₁₀ and PM_{2.5} from the project exceed the exemption thresholds in s. NR 406.04(2), Wis. Adm. Code.

Other Actions:

The requirement to submit the annual compliance certification report to USEPA will be removed from the permit. This report is now only required to be submitted to the Department.

SOURCE DESCRIPTION

Generac Power Systems Inc. is a manufacturer of electric engines and generators. The generators produced vary in size from small consumer units to large commercial backup units. The company operates several manufacturing facilities in Wisconsin. This facility is located in the Town of Genesee in Waukesha County, just southwest of the City of Waukesha. The facility houses manufacturing operations along with administrative offices and research laboratories. The facility also serves as the company's headquarters.

The facility is located at Highway 59 and Hillside Road in rural Waukesha County. The facility is surrounded by open fields and gently rolling terrain. The site is in an area that is currently attainment/unclassified for all pollutants.

Description of New or Modified Units.**A. Emission Unit Information.**

Process number:	P02A
Unit description:	Indoor Engine Testing – Up to 5 test cells
Control technology status:	Uncontrolled
Maximum continuous rating:	Gasoline – 0.91 MMBtu/hr Diesel – 35.72 MMBtu/hr Propane – 14.01 MMBtu/hr Natural Gas – 12.49 MMBtu/hr
Date of construction or last modification:	To be constructed after permit issuance
Construction permit:	16-DMM-001

Stack Information.

Stack identification number:	S02
Exhausting unit(s):	P02A, P02B
This stack has an actual exhaust point:	Yes
Discharge height above ground level (ft):	45.0
Inside dimensions at outlet (ft):	3.0
Exhaust flow rate (normal) (ACFM):	37,450
Exhaust flow rate (maximum) (ACFM):	37,450

Stack Information.

Exhaust gas temperature (normal) (°F):	1,050
Exhaust gas discharge direction:	Up
Stack equipped with any obstruction:	No

B. Emission Unit Information.

Process number:	P02B
Unit description:	Outdoor Engine Testing – Up to 5 test cells
Control technology status:	Uncontrolled
Maximum continuous rating:	Gasoline – 0.76 MMBtu/hr Diesel – 28.65 MMBtu/hr Propane – 9.74 MMBtu/hr Natural Gas – 11.0 MMBtu/hr
Date of construction or last modification:	To be constructed after permit issuance
Construction permit:	16-DMM-001

Stack Information.

Stack identification number:	S02
Exhausting unit(s):	P02A, P02B
This stack has an actual exhaust point:	Yes
Discharge height above ground level (ft):	45.0
Inside dimensions at outlet (ft):	3.0
Exhaust flow rate (normal) (ACFM):	37,450
Exhaust flow rate (maximum) (ACFM):	37,450
Exhaust gas temperature (normal) (°F):	1,050
Exhaust gas discharge direction:	Up
Stack equipped with any obstruction:	No

C. Emission Unit Information

Process number:	P03 (formerly P70)
Unit description:	Indoor Testing for Larger Generators/Engines – 2 test cells
Control technology status:	Uncontrolled
Maximum continuous rating:	Diesel – 54.58 MMBtu/hr Propane – 22.56 MMBtu/hr Natural Gas – 50.4 MMBtu/hr
Date of construction or last modification:	2013
Construction permit:	16-DMM-001

Stack Information

Stack identification number:	S03
Exhausting unit(s):	P03
This stack has an actual exhaust point:	Yes
Discharge height above ground level (ft):	45.0
Inside dimensions at outlet (ft):	3.0
Exhaust flow rate (normal) (ACFM):	37,450
Exhaust flow rate (maximum) (ACFM):	37,450
Exhaust gas temperature (normal) (°F):	786
Exhaust gas discharge direction:	Up
Stack equipped with any obstruction:	No

D. Emission Unit Information

Process number:	P04
Unit description:	Training/Service Center– Up to 30 test cells
Control technology status:	Uncontrolled
Maximum continuous rating:	Diesel – 11.27 MMBtu/hr Propane – 10.65 MMBtu/hr Natural Gas – 7.4 MMBtu/hr

D. Emission Unit Information

Process number:	P04
Date of construction or last modification:	To be constructed after permit issuance
Construction permit:	16-DMM-001

Stack Information – Scenario #1¹

Stack identification number:	S04
Exhausting unit(s):	P04
This stack has an actual exhaust point:	Yes
Discharge height above ground level (ft):	40.0
Inside dimensions at outlet (ft):	2.5
Exhaust flow rate (normal) (ACFM):	32,060
Exhaust flow rate (maximum) (ACFM):	32,060
Exhaust gas temperature (normal) (°F):	1,150
Exhaust gas discharge direction:	Up
Stack equipped with any obstruction:	No

Stack Information – Scenario #2 Error! Bookmark not defined.

Stack identification number:	S03
Exhausting unit(s):	P03
This stack has an actual exhaust point:	Yes
Discharge height above ground level (ft):	45.0
Inside dimensions at outlet (ft):	3.0
Exhaust flow rate (normal) (ACFM):	37,450
Exhaust flow rate (maximum) (ACFM):	37,450
Exhaust gas temperature (normal) (°F):	786
Exhaust gas discharge direction:	Up
Stack equipped with any obstruction:	No

Stack Parameter Summary For Stacks Included in Permit 16-DMM-001.

Stack ID	Circular or Rectangular	Discharge Direction	Exhaust Obstacle	Diameter	Height	Temp.	Normal Flow Rate	Maximum Flow Rate
		U, D, H	Yes/No	ft	ft	°F	ACFM	ACFM
S01	Circular	U	No	3.0	45.0	1,050	37,450	37,450
S02	Circular	U	No	3.0	45.0	1,050	37,450	37,450
S03	Circular	U	No	3.0	45.0	786	37,450	37,450
S04 ¹	Circular	U	No	2.5	40.0	1,150	32,060	32,060

Insignificant Emissions Units.

Maintenance of Grounds, Equipment, and Buildings
 Boiler, turbine and HVAC system maintenances
 Pollution control equipment maintenance
 Purging of Natural Gas Lines
 Internal Combustion Engine Used for Warehouse and Material Transport
 Fire Control Equipment
 Janitorial Services
 Office Activities
 Convenience Water Heating
 Convenience Space Heating (<5 mmBtu/hr burning gas)
 Fuel oil storage tanks (<10,000 gal)
 Demineralization and oxygen scavenging of water for boilers
 Sanitary sewer and plumbing venting
 Production and maintenance welding and flame cutting
 Maintenance and production metal grinding (abrasive grinding wheels)

¹ Generac has requested that the construction permit include two possible stack scenarios for process P04. The first scenario is to construct a new stack S04 and have emissions from P04 exhaust to that stack. The second scenario is to not construct stack S04 but instead have emissions from process P04 exhaust through stack S03 along with emissions from process P03.

Cold-cleaners (degreasing, P45)
 Silk Screen printing
 Refrigeration (<0.1 mmBtu/hr burning diesel fuel)
 Process welding (P-AB)
 Machine Shop Activities/Workbench Hood (P-AC)
 Epoxy Powder Dust Collection (P-AD)
 Generator/Engine Assembly
 Incidental application of aerosol lubricants during assembly
 Touch up painting with aerosol can application
 Rotor Bearing Oven

CROSS MEDIA IMPACTS

There are no significant new cross media impacts from the proposed project.

EMISSION CALCULATIONS.

The permit application contained emission calculations for the proposed project. These emission calculations were reviewed and appeared to be correct, although the Department calculated different potential to emit emission rates for the project based on the proposed limits on the project to avoid review under PSD. A summary of the emission calculations is provided below:

- Maximum theoretical emission rates are calculated from the maximum theoretical fuel usage which is based on the largest engines that can be tested in each test cell as well as the worst-case fuel.
- Potential to emit (PTE) rates for PM₁₀, CO and NO_x are based on the emission rates used in the air dispersion modeling analysis which will be set as permit limits. PM and PM_{2.5} emissions are assumed to be equal to PM₁₀ emissions. Emissions of SO₂, VOC, carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) are based on calculations using fuel usage rates that correlate with the proposed emission limits for CO, NO_x and PM₁₀, and the emission factors in the table below. Carbon dioxide equivalent (CO₂e) emissions were calculated using emissions of CO₂, CH₄ and N₂O multiplied by their global warming potentials which were taken from Table B of s. NR 405.07, Wis. Adm. Code.
- Emissions from the engines were calculated using the emission factors in the table below. Emission factors for gasoline, diesel and propane are in units of pounds per 1,000 gallons (lb/gal3) and emission factors for natural gas are in units of pounds per million cubic feet (lb/MMCF).

Pollutant	Gasoline	Diesel	Propane	Natural Gas
	(lb/gal3)	(lb/gal3)	(lb/gal3)	(lb/MMCF)
PM/PM ₁₀	6.47	6.2	1.8	20.1
PM _{2.5}	6.47	5.81	1.8	20.1
CO	3,940	107	129	399
SO ₂	5.31	0.56	0.35	0.6
NO _x	102	221	139	2,840
VOC	148	10.9	83	116
CO ₂	19,350	22,508	12,770	120,173
CH ₄	0.827	0.827	0.827	2.27
N ₂ O	0.165	0.165	2.27	0.23

The source of the emission factors in the table above are as follows:

- Gasoline: Criteria pollutant factors are from WEBFIRE for Source Classification Code (SCC) 20400401, gasoline internal combustion engine testing. Greenhouse gas emission factors are from 40 CFR Part 98, Tables C-1 and C-2.
- Diesel: Criteria pollutant emission factors are derived from the document EPA-420-R-10-018, NR-009d, Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition, July 2010, greenhouse gas emission factors are from 40 CFR Part 98, Tables C-1 and C-2.
- Propane: SO₂, NO_x, VOC and CO factors are from the document EPA 450/4-90-003, AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants, March 1990, for SCC 20301001. PM, PM₁₀, and PM_{2.5} factors are from WEBFIRE SCC 20100202, natural gas internal combustion engines. Greenhouse gas emission factors are from 40 CFR Part 98, Tables C-1 and C-2.
- Natural gas: Criteria pollutant factors are from WEBFIRE SCC 20100202, natural gas internal combustion engines. Greenhouse gas emission factors are from 40 CFR Part 98, Tables C-1 and C-2.

- Emission factors for hazardous air pollutants (HAP) are included in Appendix A.
- The potential to emit of s. 112(b) federal HAP for the facility are limited to less than 10 tons per year for each individual HAP and less than 25 tons per year for a combination of all federal HAP.
- Generac has proposed to limit emissions of CO, NO_x and VOC from the proposed project to less than the PSD major source thresholds of 250 tons per year so that the project by itself does not trigger PSD review. Maximum theoretical emissions of all other pollutants regulated under PSD are below the major source thresholds, so no limits on the PTE of these pollutants are necessary.

Note Regarding Fine Particulate Matter Emissions:² When establishing a separate National Ambient Air Quality Standard (NAAQS) for fine particulate matter, US EPA described differences in fine particulate matter (regulated as PM_{2.5})³ and coarse particulate matter (regulated as PM₁₀)⁴ and PM). One of the fundamental differences identified by US EPA is the formation mechanisms of fine particulate matter as compared to the formation mechanisms of coarse particulate matter. Coarse particles are generated by mechanical processes (e.g.: crushing, grinding, abrasion of surfaces, evaporation of sprays, suspension of dusts). Fine particles include nuclei and accumulation mode particles and are formed by chemical reaction, condensation, coagulation, and nucleation with gases. Fine mode particles contain primary particles from combustion sources and secondary particles that result from condensation of low-volatility vapors formed from chemical reactions. Another fundamental difference identified by US EPA is the distinctly different sources of fine particulate matter as compared to coarse particulate matter. Fine particulate matter is emitted primarily from combustion sources and high temperature processes such as smelters, grey iron foundries, aluminum production, glass manufacturing, sulfate (Kraft) pulping, and steel mills. Fine particulate matter can also be formed as a secondary pollutant in the atmosphere. The secondary formation of fine particulate matter depends on reactions in the atmosphere involving OH, O₃, and H₂O₂ species. Sulfur dioxide and nitrogen oxides, and certain organic compounds are major precursors of secondary fine particulate matter. Secondary formation of particulate matter from any particular source cannot be estimated reliably. Secondary formation particulate matter is a regional pollutant like ozone and is not considered in the analysis in this section.

Particulate matter calculated in this section is particulate matter directly emitted as a primary pollutant. Fine particulate matter, referred to as PM_{2.5}, is emitted from combustion sources and high temperature industrial processes. Particulate matter emissions from units P01A, P01B, P02A, P02B, P03 and P04 are a result of fuel combustion and PM_{2.5} emissions from these units are estimated in this section and summarized in the “Emission Summary” section.

WISCONSIN HAZARDOUS AIR POLLUTANT (NR 445) REVIEW

The project will result in the emissions of a number of hazardous air pollutants (HAPs). However, the HAP emissions will be the result of the combustion of gasoline, natural gas, diesel fuel or propane. These fuels are considered Group 1 virgin fossil fuels. HAP emissions from the combustion of Group 1 virgin fossil fuels are exempt from ch. NR 445, Wis. Adm. Code, under s. NR 445.07(5)(a), Wis. Adm. Code. Therefore, the ch. NR 445, Wis. Adm. Code, analysis in the preliminary determination for permit 268014670-P20 remains valid. Please refer to that document for additional information.

Engine tested at the facility while combusting fuel oil are subject to regulation under s. NR 445.09, Wis. Adm. Code. Sec. NR 445.09(3)(c), Wis. Adm. Code, requires that the owner or operator of a facility that conducts any testing involving the operation of an engine or group of engines subject to s. NR 445.09, Wis. Adm. Code, where the engine or engines combust, in the aggregate, 40,000 gallons or more of fuel oil in any 12 consecutive month period control particulate matter emissions from the facility from the engine or engines subject to this section to a level that is the best available control technology (BACT). Per ss. NR 445.09(1)(a) and (e), Wis. Adm. Code, testing of the following engines are not subject to regulation under s. NR 445.09, Wis. Adm. Code:

² Reference: *Air Quality Criteria for Particulate Matter*, Volume I of III, EPA/600/P-95/001aF, April 1996.

³ “PM_{2.5}” means particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured in the ambient air by a reference method based on Appendix L of 40 CFR part 50, incorporated by reference in s. NR 4484.04(6g), and designated in accordance with 40 CFR part 53, incorporated by reference in s. NR 484.03(5), or by an equivalent method. (s. NR 400.02(123e), Wis. Adm. Code) “PM_{2.5} emissions” means PM_{2.5} emitted to the ambient air as measured by an applicable reference method or an equivalent or alternative method specified by the department (s. NR 400.02(123m), Wis. Adm. Code.)

⁴ “PM₁₀” means particulate matter with an aerodynamic diameter of less than or equal to a nominal 10 micrometers as measured in the ambient air by a reference method based on Appendix J of 40 CFR part 50, incorporated by reference in s. NR 484.04(5), and designated in accordance with 40 CFR part 53, incorporated by reference in s. NR 484.03(5), or by an equivalent method. (s. NR 400.02(123s), Wis. Adm. Code) “PM₁₀ emissions” means finely divided solid or liquid material, with an aerodynamic diameter less than or equal to a nominal 10 micrometers, emitted to the ambient air as measured by an applicable reference method or an equivalent or alternative method specified by the department. (s. NR 400.02(124), Wis. Adm. Code.)

- Engines with rated brake power less than 100 horsepower;
- Engines purchased prior to January 1, 2011 and rated at 175 horsepower or greater that combust fuels with a sulfur content of no greater than 15 ppm and meet the Tier 2 particulate emission standard for nonroad engines in 40 CFR part 89;
- Engines purchased prior to January 1, 2012 and rated at 100 horsepower to less than 175 horsepower that combust fuels with a sulfur content of no greater than 15 ppm and meet the Tier 2 particulate emission standard for nonroad engines in 40 CFR part 89;
- Engines purchased on or after January 1, 2011 and rated at 175 horsepower or greater that combust fuels with a sulfur content of no greater than 15 ppm and meet the Tier 4 particulate emission standard for nonroad engines in 40 CFR parts 1039, 1065 and 1068; and
- Engines purchased on or after January 1, 2012 and rated at 100 horsepower to less than 175 horsepower that combust fuels with a sulfur content of no greater than 15 ppm and meet the Tier 4 particulate emission standard for nonroad engines in 40 CFR parts 1039, 1065 and 1068.

Generac has reviewed records for the last two years and found that they did not combust more than 40,000 gallons of fuel oil in any 12 consecutive month period, even if the exempted engines listed above are included in the fuel usage total. Generac believes that the majority of the engines tested at the facility meet one of the exemptions listed above. Therefore, they do not believe that the facility has ever exceeded the 40,000 gallons per year threshold. The permit will require that Generac limit the amount of fuel oil combusted in engines subject to regulation under s. NR 445.09, Wis. Adm. Code, to less than 40,000 gallons per year. Under s. NR 445.09(4)(c), Wis. Adm. Code, if the facility ever exceeds this amount, they are required to control particulate matter emissions to a level that is the BACT and apply for a construction permit under s. NR 406, Wis. Adm. Code, to incorporate the BACT requirements.

COMPLIANCE AND TECHNOLOGY REVIEW

The proposed project does not involve any emission control devices. Compliance with the emission limits in the permit will be demonstrated by monitoring and recording fuel usage and calculating emissions using the emission factors listed in the emission factor table of the "Emission Calculations" section above. The equations and emission factors to be used to calculate emission will be specified in the permit. The permit will also require that Generac perform diesel engine verification testing to ensure that the PM₁₀, NO_x, CO and VOC emission factors are representative of the engines tested at the facility.

AIR QUALITY REVIEW

Dispersion modeling of direct PM_{2.5} emissions is ineffective as a means for showing whether a source will cause or exacerbate violation of the PM_{2.5} air quality standard or increment. Direct, industrial stationary source emissions of PM_{2.5} do not correlate with ambient concentrations of PM_{2.5} in the atmosphere. The details of this evaluation are available in the attached Technical Support Document (TSD) titled "Air Quality Review of PM_{2.5} Emissions from Stationary Sources in Wisconsin", dated February 2016.

For the reasons described in the attached Technical Support Document (TSD), the Department's approach to determine whether a direct PM_{2.5} source causes or exacerbates violation of the PM_{2.5} air standard or increment, and thus can be issued an air permit, will be consistent with the determination used for other regional pollutants such as ozone. The Department has determined that direct PM_{2.5} emissions from existing sources, minor new sources, and minor modifications of sources does not cause or exacerbate violation of the PM_{2.5} air quality standard or increment. This conclusion and the information contained in the supporting TSD document serves as the Department finding pursuant to s. 285.63(1)(b), Wis. Stats for the PM_{2.5} air quality standard.

Air dispersion modeling was conducted for SO₂, CO, PM₁₀ and NO_x emissions. The results of this analysis are provided below:

A. Introduction

A revised dispersion modeling analysis was completed on February 19, 2016 to assess the impact to ambient air of the sulfur dioxide (SO₂), carbon monoxide (CO), particulate matter, and nitrogen oxide (NO_x) emissions from sources at Generac Power Systems in Waukesha (Waukesha County).

B. Modeling Analysis

- Generac supplied the emission parameters used in this analysis via a report from their consultant TRC. Building dimensions were determined using BPIP-PRIME with measurements taken on plot plans provided with the application. Please refer to the source parameter table.

- Five years (2006-2010) of preprocessed meteorological data was used in this analysis. The surface data was collected in Fond du Lac (FLD), and the upper air meteorological data originated in Green Bay.
- The AERMIC (AMS/EPA Regulatory Model Improvement Committee) Model (AERMOD) was also used in the analysis. The model used rural dispersion coefficients with the regulatory default options. These allow for calm wind and missing data correction, buoyancy induced dispersion, and building downwash including recirculation cavity effects.
- Regional background concentrations were found to be as follows:

BACKGROUND CONCENTRATIONS (Concentrations are in $\mu\text{g}/\text{m}^3$)		
Pollutant	Averaging Period	Concentration
SO ₂	3 hour	11.8
	24 hour	11.2
	Annual	5.4
NO ₂	Annual	8.0
CO	1 hour	950.5
	8 hour	904.7
PM ₁₀	24 hour	29.4

- The 1,000 receptors used in this analysis consisted of a rectangular grid with 25-meter resolution extending 350 meters from the sources. Receptors on top of company-owned buildings, within the facility fence line, or otherwise not considered ambient air in relation to the facility were excluded. Receptor elevations were derived from AERMAP using National Elevation Dataset (NED) tiles.
- The Waukesha County PSD baseline for SO₂ was set in 1991. Any increase of allowable emission since that date consumes increment. All sources at Generac consume increment, and a review of the emissions inventory found no other increment consuming sources in the area.

C. Model Results

The results of the dispersion modeling analysis indicate that all air quality standards will be met assuming the emission rates and stack parameters listed in the source tables. Note that two different operating scenarios were analyzed. Only the highest results are presented in the tables below.

Modeling Analysis Results (All Concentrations in $\mu\text{g}/\text{m}^3$)			
	SO ₂ – 3 hour	SO ₂ – 24 hour	SO ₂ – Annual
New Source Impact	11.3	6.9	0.5
PSD Increment	512.0	91.0	20.0
% Increment Consumed	2.2	7.6	2.5
Facility Impact	11.3	6.9	0.5
Background Concentration	11.8	11.2	5.4
Total Concentration	23.1	18.1	5.9
NAAQS	1,300.0	365.0	80.0
% NAAQS	1.8	5.0	7.4

Modeling Analysis Results (All Concentrations in $\mu\text{g}/\text{m}^3$)				
	PM ₁₀ – 24 hour	NO ₂ – Annual	CO – 1 hour	CO – 8 hour
Facility Impact	58.1	28.6	3,685.3	3,183.6
Background Concentration	29.4	8.0	950.5	904.7
Total Concentration	87.5	36.6	4,635.8	4,088.3
NAAQS	150.0	100.0	40,000	10,000
% NAAQS	58.3	36.6	11.6	40.9

Note: The USEPA and WDNR Ambient Ratio Method Tier II was applied to convert NO_x emissions into NO₂

D. Conclusion

The results of the modeling analysis demonstrate that the applicable air quality and increment standards will be satisfied assuming the emissions rates and stack parameters listed in the source table.

GENERAC WAUKESHA – SCENARIO 1 Emission Rates & Stack Parameters ⁵										
Stack ID	LOCATION (UTM83)	HEIGHT (M)	HEIGHT (FT)	DIAM (M)	VELOCITY (M/S)	TEMP (K)	PM ₁₀ #/HR	SO ₂ #/HR	NO _x #/HR	CO #/HR
S01	391252, 4757509	13.72	45.00	0.915	26.92	838.0	7.350	0.540	28.92	379.0
S02	391314, 4757518	13.72	45.00	0.915	26.92	838.0	5.630	0.640	24.00	203.7
S03	391368, 4757516	13.72	45.00	0.915	26.92	692.0	2.500	0.210	31.13	42.60
S04	391393, 4757457	12.20	40.00	0.762	23.04	894.0	0.889	0.080	1.198	25.70
S38	391332, 4757431	7.870	25.82	0.180	14.10	339.0	0.000	0.000	0.038	0.030
S41	391382, 4757468	12.80	42.00	0.850	9.000	294.0	0.294	0.000	0.000	0.000
S57	391408, 4757410	11.28	37.00	0.850	9.000	294.0	0.294	0.000	0.000	0.000
S56	391288, 4757556	1.830	6.000	0.301	35.00	900.0	0.333	0.040	1.484	5.800
Area Source Parameters and Emission Rates										
Stack ID	LOCATION (UTM83)	HEIGHT (M)	EAST (M)	NORTH (M)	ANGLE (degrees)	PM ₁₀ #/HR	SO ₂ #/HR	NO _x #/HR	CO #/HR	
3US	391308, 4757394	6.710	67.90	80.20	-21.50	0.003	0.008	1.400	1.170	

GENERAC WAUKESHA – SCENARIO 2 Emission Rates & Stack Parameters ¹										
Stack ID	LOCATION (UTM83)	HEIGHT (M)	HEIGHT (FT)	DIAM (M)	VELOCITY (M/S)	TEMP (K)	PM ₁₀ #/HR	SO ₂ #/HR	NO _x #/HR	CO #/HR
S01	391252, 4757509	13.72	45.00	0.915	26.92	838.0	7.350	0.540	28.92	379.0
S02	391314, 4757518	13.72	45.00	0.915	26.92	838.0	5.630	0.640	24.00	203.7
S03	391368, 4757516	13.72	45.00	0.915	26.92	692.0	3.400	0.210	32.32	68.3
S38	391332, 4757431	7.870	25.82	0.180	14.10	339.0	0.000	0.000	0.038	0.030
S41	391382, 4757468	12.80	42.00	0.850	9.000	294.0	0.294	0.000	0.000	0.000
S57	391408, 4757410	11.28	37.00	0.850	9.000	294.0	0.294	0.000	0.000	0.000
S56	391288, 4757556	1.830	6.000	0.301	35.00	900.0	0.333	0.040	1.484	5.800
Area Source Parameters and Emission Rates										
Stack ID	LOCATION (UTM83)	HEIGHT (M)	EAST (M)	NORTH (M)	ANGLE (degrees)	PM ₁₀ #/HR	SO ₂ #/HR	NO _x #/HR	CO #/HR	
3US	391308, 4757394	6.710	67.90	80.20	-21.50	0.003	0.008	1.400	1.170	

Note: In both scenarios, NO_x hourly rates were derived from annual limits.

EMISSION SUMMARY

Emissions From New Equipment Or Modification

A. Process Emissions

Stack S02, Processes P02A and P02B – New Indoor Engine Test Cells and Outdoor Engine Test Cells

Pollutant	MTE		PTE	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
PM/PM ₁₀ /PM _{2.5}	5.6	23.7	5.6	23.7
CO	203.7	892.1	107.6	74.1
SO ₂	0.6	2.8	0.3	0.2
NO _x	245.4	1,074.9	123.4	105.1
VOC	34.8	152.3	21.0	17.7
GHG (as CO ₂ e)	33,658	147,420	11,851	22,751

Process P03 – Modified Large Engine/Generator Test Cells

Pollutant	MTE	PTE
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⁵ The source parameters in the table were used for modeling purposes, based on conversion from English units. Refer to the permit application forms or submittals in support of the permit application for the original English unit parameters.

	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
PM/PM ₁₀ /PM _{2.5}	2.5	10.8	2.5	2.5
CO	42.6	186.7	42.6	42.6
SO ₂	0.2	0.9	0.2	0.2
NO _x	136.3	597.1	136.3	136.3
VOC	19.9	87.2	19.9	19.9
GHG (as CO ₂ e)	8,997	39,406	8,995	17,935

Process P04 – New Training/Service Center Test Cells

Pollutant	MTE		PTE	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
PM/PM ₁₀ /PM _{2.5}	0.9	3.9	0.5	0.1
CO	25.7	112.6	15.0	3.7
SO ₂	0.1	0.4	0.05	0.01
NO _x	65.6	287.5	21.0	5.2
VOC	16.4	71.7	9.4	2.4
GHG (as CO ₂ e)	3,362	14,724	3,739	9,239

B. Total Emissions From New Equipment or Modification

Pollutant	MTE		PTE	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
PM/PM ₁₀ /PM _{2.5}	9.0	39.1	8.6	39.4
CO	278.1	1,218	165.2	249*
SO ₂	1.0	4.1	0.6	4.1
NO _x	443.1	1,941	280.7	246.7
VOC	69.8	305.5	50.3	249*
GHG (as CO ₂ e)	33,658	148,889	24,585	49,925

* The annual PTE rates in this table represent the permit limits that will be established to ensure that emissions from the proposed project are below the PSD major source thresholds.

Pollutant	PTE*
	(ton/yr)
Individual s. 112(b) federal HAP	<10
Combined s. 112(b) federal HAPs	<25

*These emission rates represent the permit allowable emission rates

Total Facility Emissions After Installation of New Equipment or Modification

[Note: For a summary of emissions from other emissions units at the facility that are not being constructed or modified, please refer to the preliminary determination for the facility's current operation permit 268014670-P20.]

Pollutant	PTE*
	(ton/yr)
PM/PM ₁₀ /PM _{2.5}	31.2
CO	374.9
SO ₂	4.5
NO _x	373.4
VOC	322.5
GHG (as CO ₂ e)	138,859

*These emission rates represent the permit allowable emission rates

Pollutant	PTE*
	(ton/yr)
Individual s. 112(b) federal HAP	<10
Combined s. 112(b) federal HAPs	<25

*These emission rates represent the permit allowable emission rates

FACILITY AND PROJECT CLASSIFICATION**1. Project Status.**

The proposed project is a minor modification to a minor source under PSD.

2. Facility Status After the Permit is Issued.

After the permit is issued, the facility will be a major source under Part 70 and PSD because potential emissions of CO, NO_x and VOC exceed the Part 70 and PSD major source thresholds, and the facility will continue to be an area source of s. 112(b) federal HAP.

3. EPA Class Code After the Permit is Issued.

- ☒ **“A”** [Means the source’s maximum theoretical emissions **and** potential to emit for one or more pollutants are greater than major source thresholds. The source is a major source (will have a FOP)];
- ☐ **“SM80”** [Means the source’s maximum theoretical emissions of one or more pollutants are greater than major source thresholds and potential to emit is at least 80% but less than 100% of major source thresholds. The source is a non-major source (will have a FESOP)];
- ☐ **“SM”** [Means the source’s maximum theoretical emissions of one or more pollutants are greater than major source thresholds but potential to emit for all pollutants is less than 80% of major source thresholds. The source is a non-major source (usually will have a FESOP)];
- ☐ **“B”** [Means the source’s maximum theoretical emissions and potential to emit for all pollutants are less than major source thresholds. The source is a non-major source (will have a SOP)].

4. Summary.

NSR Applicability	After Permit Issuance	
	Major	Minor
PSD	X	
Non-Attainment	N/A	N/A
Federal HAP		X

Part 70 Applicability	Facility After Permit Issuance		
	Part 70	FESOP (Syn. Minor)	Non-part 70
Status	X		

EPA Class Code	EPA Class Code After Permit Issuance			
	A	SM80	SM	B
Status	X			

ENVIRONMENTAL ANALYSIS

An air pollution control construction permit that does not require review under chs. NR 405 or 408, Wis. Adm. Code, is considered a minor action under s. NR 150.20(1m)(o), Wis. Adm. Code and does not require an environmental analysis.

RULE APPLICABILITY

Stack S01, Processes P01A, P01B – Existing Indoor Engine Testing and Outdoor Engine Testing

Stack S02, Processes P02A, P02B – New Indoor Engine Testing and Outdoor Engine Testing

Stack S03, Process P03 – Large Indoor Test Cells

Stack S04, Process P04 – Training/Service Center

NR 404 – Ambient Air Quality

Emissions from the facility were modeled to demonstrate that the National Ambient Air Quality Standards for PM₁₀, NO_x, SO₂ and CO and the PSD increments for SO₂ would be met. The results of the modeling indicated that all standards would be met. The permit will include hourly emission limits for PM₁₀ to demonstrate that the 24-hour standard will be met, hourly limits for CO to demonstrate that the 1-hour and 8-hour standards will be met and monthly average emission limits for NO_x to demonstrate that the annual standard will be met. Because the predicted impact of SO₂ emissions were far below the standards, emission limits will not be set for SO₂.

NR 405 – Prevention of Significant Deterioration (PSD)

Prior to issuance of this construction permit, the facility is a minor source under PSD. After the project, the facility will be classified as a major source under PSD because potential emissions of NO_x, CO and VOC from the facility will exceed the major source threshold of 250 tons per year. To avoid this project being subject to review under PSD, Generac has elected to limit emissions of NO_x, CO and VOC from the project to below the PSD major source

threshold of 250 tons per year per pollutant, as discussed in the “Sec. 285.65(7), Wis. Stats. – Elective Limits” section below.

NR 415 – Control of Particulate Emissions

The engine/generator testing processes are subject to a limit of 0.40 pounds of particulate matter per 1,000 pounds of gas under s. NR 415.05(1)(o), Wis. Adm. Code. These processes are not subject to the process weight rate limit under s. NR 415.05(2), Wis. Adm. Code, because the definition of process weight rate excludes the weight of fuels so that equation does not apply to fuel burning processes.

NR 431 – Control of Visible Emissions

The engine/generator testing processes are subject to a visible emission limit of 20% opacity under s. NR 431.05, Wis. Adm. Code. The exceptions in s. NR 431.05, Wis. Adm. Code, do apply.

NR 445 – Control of Hazardous Air Pollutants

These processes are exempt from ss. NR 445.07 and NR 445.08, Wis. Adm. Code, because HAP emissions from the processes are the result of the combustion of group 1 virgin fossil fuels. The testing of diesel engines in these processes are subject to the fuel, control and compliance requirements for compression ignition internal combustion engines combusting fuel oil in s. NR 445.09, Wis. Adm. Code, as discussed in the “Wisconsin Hazardous Air Pollutant (NR 445) Review” section of this preliminary determination.

NR 485 – Control Of Emissions From Motor Vehicles, Internal Combustion Engines And Mobile Sources; Tampering Prohibition

Under s. NR 485.055, Wis. Adm. Code, emissions of PM from stationary gasoline or diesel powered internal combustion reciprocating engines may not exceed 0.50 pounds of PM per million Btu heat input. Under s. NR 485.05(1), gasoline-powered internal combustion engines of 25 horsepower (HP) or more may have no visible emissions for longer than 5 consecutive seconds, except when uncombined water is the cause for the violation.

Sec. 285.65(7), Wis. Stats – Elective Limits

Generac is electing to limit emissions of NO_x, CO and VOC from the project (processing P02A, P02B, P03 and P04) to less than the PSD major source threshold of 250 tons per year per pollutant. These limits will be expressed as 41,500 pounds per month averaged over each consecutive 12-month period. Maximum theoretical emissions of all other regulated pollutants for the project are below the PSD major source thresholds, so no permit limits are required for the other regulated pollutants.

Generac has requested that the emissions from process P03 be excluded from the facility-wide emissions limits in permit 268014670-P20 for NO_x, CO, VOC, SO₂ and PM emissions from existing combustion processes. Permit 268014670-P20 states that these limits apply to facility-wide combustion sources, including engine testing. These limits were originally put in place when Waukesha County was an ozone nonattainment area to avoid nonattainment area review for the existing engine testing processes at the facility and were not meant to include process P03 which was installed in 2013 after Waukesha County was re-designated as attainment for ozone. The Department agrees that permit 268014670-P20 incorrectly expanded the original limits to include process P03 and the limits will be re-written to clarify that they do not apply to process P03.

Generac is electing to carry forward the limits on s. 112(b) federal HAP from permit 268014670-P20 so that the facility will continue to be an area source of HAP emissions. The compliance demonstration, monitoring and recordkeeping requirements for HAP emissions in that permit are inadequate. So, the construction permit will include revised compliance demonstration, monitoring and recordkeeping requirements to make these limitations enforceable.

40 CFR Part 63, Subpart CCCCCC - National Emission Standards For Hazardous Air Pollutants (NESHAP) For Source Category: Gasoline Dispensing Facilities

This facility is subject to this NESHAP because the facility is an area source of s. 112(b) federal HAP and the facility meets the definition of a gasoline dispensing facility (GDF) under 40 CFR 63.11132.

40 CFR 53, Subpart PPPP – NEHSAP for Engine Test Cells/Stands

This facility not subject to this NESHAP because the facility is an area source of s. 112(b) federal HAP.

NEW SOURCE PERFORMANCE STANDARDS (NSPS) APPLICABILITY

For proposed construction of a source:

1. Is the proposed source in a source category for which there is an existing or proposed NSPS?

☐ Yes ☒ No ☐ Not applicable.

2. Is the proposed source an affected facility?

☐ Yes ☐ No ☒ Not applicable.

For the proposed modification of an existing source:

1. Is the existing source, which is being modified, in a source category for which there is an existing or proposed NSPS?

☐ Yes ☒ No ☐ Not applicable.

2. Is the existing source, which is being modified, an affected facility (prior to modification)?

☐ Yes ☐ No ☒ Not applicable.

3. Does the proposed modification constitute a modification **under NSPS** to the existing source?

☐ Yes ☐ No ☒ Not applicable.

4. Will the existing source be an affected facility after modification?

☐ Yes ☐ No ☒ Not applicable.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS) APPLICABILITY

Part 61 NESHAPS:

1. Will the proposed new or modified source emit a pollutant controlled under an existing or proposed NESHAPS?

☒ Yes ☐ No *Small amounts of arsenic, benzene, beryllium and arsenic from fuel combustion.*

2. Is the proposed new or modified source subject to an existing or proposed NESHAPS?

☐ Yes ☒ No

Part 63 NESHAPS:

1. Will the proposed new or modified source emit a pollutant controlled under an existing Part 63 NESHAPS?

☒ Yes ☐ No *Numerous HAPs from fuel combustion.*

2. Is the proposed new or modified source subject to an existing Part 63 NESHAPS?

☐ Yes ☒ No *The new and modified engine testing processes are not subject to a NESHAP. However, the facility is subject to 40 CFR Part 63, Subpart CCCCCC, NESHAP for Area Source Gasoline Dispensing Facilities.*

3. Is the proposed project subject to s. 112(g) of the Clean Air Act?

☐ Yes ☒ No.

The section 112(g) rules only apply to case-by-case MACT standards that are developed for new construction or reconstruction of sources that (by themselves) constitutes a new major source of federal hazardous air pollutants (for source categories not covered under an existing Part 63 MACT standard).

COMPLIANCE ASSURANCE MONITORING (CAM)

None of the emission units proposed under this project are equipped with control devices. Therefore, these emission units are not subject to the CAM rule under 40 CFR Part 64.

CRITERIA FOR CONSTRUCTION PERMIT APPROVAL

Section 285.63, Wis. Stats., sets forth the specific language for permit approval criteria. The Department finds that:

1. The source will meet emission limitations.
2. The source will not cause nor exacerbate a violation of an air quality standard or ambient air increment.
3. The source is operating or seeks to operate under an emission reduction option. Not Applicable.
4. The source will not preclude the construction or operation of another source for which an air pollution control permit application has been received.

PRELIMINARY DETERMINATIONS FOR CONSTRUCTION PERMIT NO. 16-DMM-001

The Wisconsin Department of Natural Resources has reviewed the construction permit application and other materials submitted by Generac Power Systems Inc. - Waukesha and hereby makes a preliminary determination that this project, when constructed or modified and operated consistent with the application and subsequent information submitted, will be able to meet the emission limits and conditions included in the attached Draft Permit. A final decision regarding emission limits and conditions will be made after the Department has reviewed and evaluated all comments received during the public comment period. The proposed emission limits and other proposed conditions in the Draft Permit are written in the same form that they will appear in the construction permit. These proposed conditions may be changed as a result of public comments or further evaluation by the Department.

PERMIT FEE CALCULATION**Basic Fees.**

PSD or NAA minor modification of a Part 70 major source. [\$7,500] \$7,500.00

Total Basic Fees \$7,500.00

Additional Fees.

The permit application is for a PSD or NAA minor source or minor modification to a major PSD or NAA source whose projected air quality impact requires a detailed air quality modeling analysis. [\$1,000] \$1,000.00

The application is for a source which requires specific permit conditions limiting the potential to emit to make the source a minor source or to make the modification a minor modification [\$3,500]. \$3,500.00

The application is for a source not reviewed under ch. NR 405 or 408, Wis. Adm. Code, where the applicant requested in writing and received the permit within 50 days of receipt of a complete application [\$5,000]. \$5,000.00

Total Additional Fee \$9,500.00

Total Fees (Total Basic Fees + Total Additional Fees) \$17,000.00

Credit(s).

The initial fee submitted with the application. [\$7,500] -\$7,500.00

Total Credits -\$7,500.00

TOTAL AMOUNT DUE (Total Fee + Total Credit) \$9,500.00

Appendix A – Engine Testing Hazardous Air Pollutant Emission Factors

Pollutant	CAS No.	Federal HAP	NR 445 HAP	DIESEL-INT lb/MMBtu	BI-FUEL lb/MMBtu	NG - INT lb/MMBtu	LP-INT	NG EXT lb/MMCF	GAS - INT lb/MMBtu
1,1,2,2 tetrachloroethane	79-34-5	Yes	Yes			2.53E-05			
1,1,2 trichloroethane	79-00-5	Yes	Yes			1.53E-05			
1,3 dichloropropene	542-75-6	Yes	Yes			1.27E-05			
1,3 Butadiene	106-99-0	Yes	Yes	3.91E-05		6.63E-04			
Acenaphthene	83-32-9	Yes ¹	No	1.42E-06				1.80E-06	
Acenaphthylene	208-96-8	Yes ¹	No	5.06E-06				1.80E-06	
Acetaldehyde	75-07-0	Yes	Yes	7.67E-04			1.60E-03		
Acrolein	107-02-8	Yes	Yes	9.25E-05			9.78E-04		
Aldehydes		No	No						7.00E-02
Ammonia	7664-41-7	No	Yes	2.12E-02		8.67E-03		4.90E-01	4.85E-03
Anthracene	120-12-7	Yes ¹	No	1.87E-06				2.40E-06	
Arsenic	7440-58-2	Yes	Yes					2.00E-04	
Barium	7440-39-3	No	Yes					4.40E-03	
Benzene	71-43-2	Yes	Yes	9.33E-04	4.45E-03	1.58E-03	9.92E-03	2.10E-03	
Benzo (a) anthracene	56-55-3	No	Yes	1.68E-06				1.80E-06	
Benzo (a) pyrene	50-32-8	No	Yes	1.88E-07				1.20E-06	
Benzo (b) fluoranthene	205-99-2	No	Yes	9.91E-08				1.80E-06	
Benzo (b,h,j) perylene	191-24-2	No	No	4.89E-07				1.20E-06	
Benzo (k) fluoranthene	207-08-9	No	Yes	1.55E-07				1.80E-06	
Beryllium	7440-41-7	Yes	Yes					1.20E-05	
Cadmium	7440-43-9	Yes	Yes					1.10E-03	
Carbon tetrachloride	56-23-5	Yes	Yes			1.77E-05			
Chlorobenzene	108-90-7	Yes	Yes			1.29E-05			
Chloroform	67-66-3	Yes	Yes			1.37E-05			
Chrysene	218-01-9	Yes ¹	No	3.53E-07				1.40E-03	
Chrome	7440-47-3	Yes	Yes					1.80E-06	
Cobalt	7440-48-4	No	Yes					8.40E-05	
Dibenzo (a,h) anthracene	53-70-3	No	Yes	5.83E-07				1.20E-06	
Copper	7440-50-8	No	Yes					8.50E-04	
1,1 Dichloroethane	75-34-3	No	No			1.13E-05			
Dichlorobenzene Isomer	25321-22-6	No	No					X	
Dimethylbenzanthracene	57-97-6	No	No					1.60E-05	
Ethylbenzene	100-41-4	Yes	Yes			2.48E-05			
Ethyl Dibromide	106-93-4	Yes	Yes						
Ethylene dichloride	107-06-2	Yes	Yes			1.13E-05			
Fluoranthene	206-44-0	Yes ¹	No	7.61E-06	3.73E-05	<-- USE		3.00E-06	
Fluorene	86-73-7	No	No	2.92E-05				2.80E-06	
Formaldehyde	50-00-0	Yes	Yes	1.18E-03	5.40E-03	2.05E-02	9.51E-03	7.50E-02	
Lead	7439-92-1	Yes	No					5.00E-04	1.70E-03
Indeno (1,2,3-cd) pyrene	193-39-5	No	Yes	3.75E-07				1.80E-06	
Isobutyraldehyde	78-84-2	No	No			4.86E-05			
3-Methylcholanthrene	56-49-5	No	No					1.80E-06	

Pollutant	CAS No.	Federal HAP	NR 445 HAP	DIESEL-INT lb/MMBtu	BI-FUEL lb/MMBtu	NG - INT lb/MMBtu	LP-INT	NG EXT lb/MMCF	GAS - INT lb/MMBtu
Manganese (Mn)	7439-96-5	Yes	Yes					3.80E-04	
Mercury	7439-97-6	Yes	Yes	3.01E-07				2.60E-04	
Methanol	67-56-1	Yes	No			3.06E-03			
2-methylnaphthalene	91-57-6	No	No					2.40E-05	
Molybdenum	7439-98-7	No	No					1.10E-03	
Methylene Chloride	75-09-2	Yes	Yes			4.12E-05			
n-Hexane	110-54-3	Yes	Yes					1.8	
Naphthalene	91-20-3	Yes	Yes	3.48E-05	1.40E-03	9.71E-05	7.26E-05	6.10E-04	
Nickel	7440-02-0	Yes	Yes					2.10E-03	
Phenanthrene	85-01-8	Yes ¹	No	2.94E-05				1.70E-05	
PAHs (aka POM)	NA	Yes	No	1.68E-04		1.41E-04			
Propylene Dichloride	78-87-5	No	Yes			1.13E-05			
Pyrene	129-00-0	No	No	4.78E-06				5.00E-06	
Selenium	7782-49-2	Yes	Yes					2.40E-05	
Styrene	100-42-5	Yes	Yes	USE-->	9.31E-06	1.19E-05			
Vinyl Chloride	75-01-4	Yes	Yes			7.18E-06			
Toluene	108-88-3	Yes	Yes	4.09E-04	5.23E-03	5.58E-04	2.40E-03	3.40E-03	
Xylenes	1330-20-7	Yes	Yes	2.85E-04		1.95E-04	6.28E-04		
Vanadium (Pentoxide)	7440-62-2	No	Yes					2.30E-03	
Zinc	7440-66-6	No	No					2.90E-02	
Fed HAPS are shaded									

Note 1: A component of Polycyclic aromatic hydrocarbons